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EXAMINER

ELMORE, REBA I

ART UNIT PAPER NUMBER

2189

DATE MAILED: 12/19/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/646,033

Applicant(s)

MAIYURAN ET AL

Examiner

Reba I. Elmore

Art Unit

2189

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 22 August 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-27 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-27 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date <u>10/22/03</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. Claims 1-27 are presented for examination.

SPECIFICATION

2. The specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.

35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 1-27 are rejected under 35 U.S.C. 102(b) as being anticipated by Krick et al.

5. Krick teaches the invention as claimed (claim 1) including an apparatus comprising:

a trace cache array to store a first trace and a second trace as the cache memory containing multiple trace segments (e.g., see col. 4, lines 35-54); and,
a trace-end predictor to store a first tail data from the first trace to predict an address for the second trace as a trace segment terminating conditions including information for an indirect branch macro-instruction (e.g., see col. 6, lines 1-7).

As to claim 2, Krick teaches the first tail data includes a set and a way for a head of the second trace as the tag entry associated with the tail and head data (e.g., see col. 6, lines 37-53).

As to claim 3, Krick teaches the first tail data includes a quickstew with the quickstew being equivalent to the associating of bits to a next way and/or bits of a previous way (e.g., see col. 6, lines 37-53).

As to claim 4, Krick teaches the trace end predictor is to read the first tail data when a first tail of the first trace is accessed (e.g., see col. 6, line 22 to col. 7, line 29).

As to claim 5, Krick teaches the trace end predictor is to read the first tail data when a first body before a first tail of the first trace is accessed (e.g., see col. 6, line 22 to col. 7, line 29).

As to claim 6, Krick teaches a selector to select the address from the trace-end predictor and a predictor (e.g., see col. 6, line 22 to col. 7, line 29).

As to claim 7, Krick teaches the selector to give priority to the predictor (e.g., see col. 6, line 22 to col. 7, line 29).

As to claim 8, Krick teaches the trace-end predictor to store a third tail data from a third trace to predict an address for a fourth trace (e.g., see Figures 1-5).

As to claim 9, Krick teaches the trace-end predictor is to store tag data of the first trace and the third trace to determine which trace is currently in execution (e.g., see Figures 1-5).

6. Krick teaches the invention (claim 10) as claimed including a method comprising:

storing tail data of a first trace during a first execution of the first trace (e.g., see Figures 1-5 and state diagrams shown in Figures 6-7);

retrieving the tail data during a second execution of the first trace (e.g., see Figures 1-5 and state diagrams shown in Figures 6-7); and,

fetching a head of a second trace from a trace cache using the tail data (e.g., see Figures 1-5 and state diagrams shown in Figures 6-7).

As to claim 11, Krick teaches the storing includes storing set and way information of the first trace (e.g., see col. 6, lines 22-52).

As to claim 12, Krick teaches the storing includes storing set and way information of the head (e.g., see col. 6, lines 22-52).

As to claim 13, Krick teaches the storing includes storing a quickstew with the quickstew being equivalent to the associating of bits to a next way and/or bits of a previous way (e.g., see col. 6, lines 37-53).

As to claim 14, Krick teaches calculating a headstew for the second trace using the quickstew with the quickstew being equivalent to the associating of bits to a next way and/or bits of a previous way (e.g., see col. 6, lines 37-53).

As to claim 15, Krick teaches the retrieving is performed subsequent to initiating access to a tail of the first trace during the second execution (e.g., see Figures 1-5 and state diagrams shown in Figures 6-7).

As to claim 16, Krick teaches the retrieving is performed subsequent to initiating access to a body of the first trace prior to a tail of the first trace during second execution (e.g., see Figures 1-5 and state diagrams shown in Figures 6-7).

As to claim 17, Krick teaches inhibiting the fetching when an off-trace prediction is made

7. Krick teaches the invention (claim 18) as claimed including an apparatus comprising:

means for storing tail data of a first trace during a first execution of the first trace (e.g., see Figures 1-5 and state diagrams shown in Figures 6-7).

means for retrieving the tail data during a second execution of the first trace (e.g., see Figures 1-5 and state diagrams shown in Figures 6-7).

means for fetching a head of a second trace from a trace cache using the tail data (e.g., see Figures 1-5 and state diagrams shown in Figures 6-7).

As to claim 19, Krick teaches the means for storing includes means for storing set and way information of the first trace (e.g., see Figures 1-5 and state diagrams shown in Figures 6-7).

As to claim 20, Krick teaches the means for storing includes means for storing set and way information of the head (e.g., see Figures 1-5 and state diagrams shown in Figures 6-7).

As to claim 21, Krick teaches the means for storing includes means for storing a quickstew with the quickstew being equivalent to the associating of bits to a next way and/or bits of a previous way (e.g., see col. 6, lines 37-53).

As to claim 22, Krick teaches a means for calculating a headstew for the second trace using the quickstew

8. Krick teaches the invention (claim 23) as claimed including a system comprising:

a processor including a trace cache array to store a first trace and a second trace, and a trace-end predictor to store a first tail data from the first trace to predict an address for the second trace (e.g., see Figures 1-5 and state diagrams shown in Figures 6-7);

a memory coupled to the processor to store instructions to be decoded to supply the trace cache array (e.g., see Figures 1-5 and state diagrams shown in Figures 6-7); and,

an audio input/output device coupled to the memory and to the processor as the trace cache being used in conventional systems which includes systems capable of being connected to audio input/output devices (e.g., see col. 4, lines 1-21).

As to claim 24, Krick teaches the first tail data includes a set and a way for a head of the second trace (e.g., see Figures 1-5 and state diagrams shown in Figures 6-7).

As to claim 25, Krick teaches the first tail data includes a quickstew with the quickstew being equivalent to the associating of bits to a next way and/or bits of a previous way (e.g., see col. 6, lines 37-53).

As to claim 26, teaches the trace end predictor is to read the first tail data when a first tail of the first trace is accessed (e.g., see Figures 1-5 and state diagrams shown in Figures 6-7).

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As to claim 27, Krick teaches the trace end predictor is to read the first tail data when a first body before a first tail of the first trace is accessed (e.g., see Figures 1-5 and state diagrams shown in Figures 6-7).

CONCLUSION

9. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Peled et al. is related to the subject matter of the present specification.

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Reba I. Elmore, whose telephone number is (571) 272-4192. The examiner can normally be reached on M-TH from 7:30am to 6:00pm, EST.

If attempts to reach the examiner by telephone are unsuccessful, the art unit supervisor for AU 2187, Donald Sparks, can be reached for general questions concerning this application at (571) 272-4201. Additionally, the official fax phone number for the art unit is (703) 746-7239.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Tech Center central telephone number is (571) 272-2100.



Reba I. Elmore
Primary Patent Examiner
Art Unit 2187

December 10, 2005
